

REMARKS

The Applicants respectfully request reconsideration of this application in view of the above amendments and the following remarks.

Specification

Applicants respectfully submit that the specification has been amended to overcome the objection. Applicants respectfully request that the Examiner withdraw the objection to the specification.

35 U.S.C. § 112 Rejection, First Paragraph

Claims 21-35 have been rejected under 35 U.S.C. § 112, first paragraph, because the Specification, while being enabling for PAC's of the formula disclosed in Figure 4, allegedly does not reasonably provide enablement for the general recitation of "photoactive compound" recited in the claims. Applicants respectfully submit that the present claims comply with the requirements of 35 U.S.C. § 112, first paragraph.

Claim 21 recites:

"21. A method comprising:

depositing a layer on a substrate;

depositing a non-chemically amplified photoresist layer upon the layer, the non-chemically amplified photoresist layer having a developer-soluble resin that is a polyhydroxystyrene-based compound suitable for extreme ultraviolet light lithography and a photoactive compound, the photoactive compound inhibiting solubility of the developer-soluble resin, wherein the photoactive compound has groups including an oxygen containing group and a nitrogen containing group that are capable of undergoing a decomposition reaction according to a Wolff rearrangement, when exposed to an extreme ultra-violet light, to form a carbonyl acid group;

exposing selected portions of the non-chemically amplified photoresist layer to the extreme ultra-violet light such that solubility of the selected portions of the non-chemically amplified photoresist layer is promoted; and

developing the exposed portions of the non-chemically amplified photoresist layer"

Applicants respectfully submit that claim 21 complies with the requirements of 35 U.S.C. § 112, first paragraph.

35 U.S.C. § 112, first paragraph recites in pertinent part, “*The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.*” Applicants respectfully submit that the specification contains a written description in compliance with 35 U.S.C. § 112, first paragraph.

Paragraph [0012] of the patent application discloses, “*FIG. 4 illustrates a photoactive compound for use as a component of a photoresist in accordance with one embodiment of the invention.*” FIG. 4 shows:

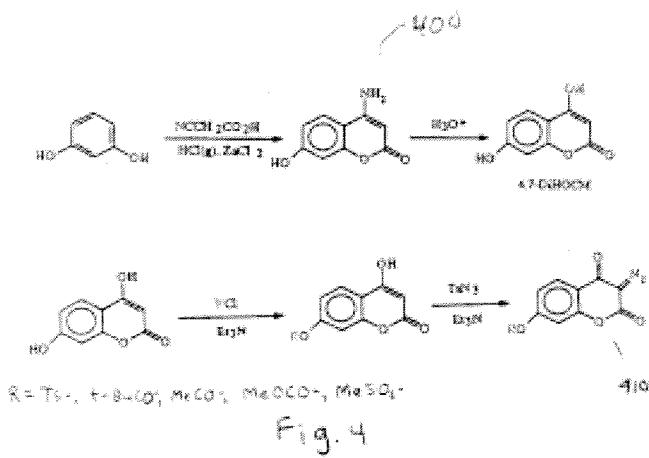


Fig. 4

Paragraph [0022] of the patent application discloses, “*FIG. 4 illustrates the synthesis of a PAC for use as a component of a photoresist in accordance with one embodiment of the invention. As shown in FIG. 4, synthesis 400 produces PAC 410 that includes a ballast group. The ballast group, R, may be any cage, phenyl, or phenyl-substituted group.*” PAC 410 in Fig. 4 clearly has groups including an oxygen containing group and a nitrogen containing group.

Paragraph [0013] of the patent application discloses, “*FIG. 5 illustrates the reaction of the photoactive compound upon exposure to the light source in accordance with one embodiment of the invention.*” FIG. 5 shows:

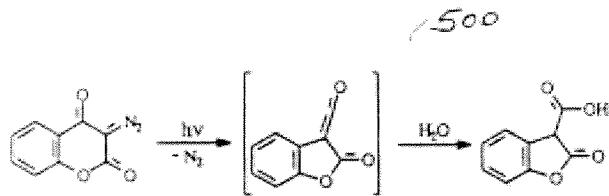


Fig. 5

Paragraph [0023] of the patent application discloses, “*FIG. 5 illustrates the reaction of the PAC upon exposure to the light source in accordance with one embodiment of the invention. The reaction 500, shown in FIG. 5, releases nitrogen and forms carbonyl acid through a photo-induced decomposition of the PAC (Wolff rearrangement). The acid promotes the solubility of the DSR in the developer and because there is limited acid diffusion the LWR is substantially reduced. For one embodiment the resulting average LWR will be reduced.*” Accordingly, Fig. 5 clearly shows an oxygen containing group and a nitrogen containing group of the photoactive compound which are capable of undergoing a decomposition reaction according to a Wolff rearrangement, when exposed to an extreme ultra-violet light, to form a carbonyl acid group.

Paragraph [0028] of the patent application discloses in pertinent part, “*At operation 615 the photoresist is masked and exposed to a light source. For one embodiment the wavelength of the light source is in the extreme infrared (EUV) region. During exposure the incident light decomposes the PAC. The PAC will convert to carbonyl acid that promotes the solubility of the DSR in the developer. The unexposed portions of the photoresist, which contains PAC inhibits the dissolution of the photoresist in these areas.*”

Accordingly, the specification teaches the use of photoactive compounds (PAC) that have groups including an oxygen containing group and a nitrogen containing group that are capable of

undergoing a decomposition reaction according to a Wolff rearrangement, when exposed to an extreme ultra-violet light, to form a carbonyl acid group.

Accordingly, the scope of claim 21 is commensurate with the disclosure, and claim 21 and its dependent claims are believed to comply with the requirements of 35 U.S.C. § 112, first paragraph.

Similarly, the scope of each of independent claims 30 and 43, and their respective dependent claims, is commensurate with the disclosure, and these claims similarly are believed to comply with the requirements of 35 U.S.C. § 112, first paragraph.

Conclusion

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention, and are in condition for allowance. Applicants respectfully request that the rejections be withdrawn and the claims be allowed at the earliest possible date.

Request For Telephone Interview

The Examiner is invited to call Brent E. Vecchia at (303) 740-1980 if there remains any issue with allowance of the case.

Request For An Extension Of Time

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

Charge Our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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Dated: May 12, 2010

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